IN THE CLAIMS:

1. (Original) A solar cell, comprising:

an active semiconductor structure having an active semiconductor structure front side and an active semiconductor structure back side, wherein the active semiconductor structure produces a voltage between the active semiconductor structure front side and the active semiconductor structure back side when illuminated from the active semiconductor structure front side;

a back electrical contact overlying and contacting the active semiconductor structure back side;

a front electrical contact overlying and contacting the active semiconductor structure front side, wherein the front electrical contact has multiple layers comprising:

a titanium layer overlying and contacting the active semiconductor structure front side,

a diffusion layer overlying and contacting the titanium layer,

a barrier layer overlying and contacting the diffusion layer, and

a joining layer overlying and contacting the barrier layer.

2. (Original) The solar cell of claim 1, wherein the solar cell further includes a front electrical lead overlying and affixed to an attachment pad region of the front electrical contact.

3. (Original) The solar cell of claim 1, wherein the front electrical contact comprises a current collector.

4. (Original) The solar cell of claim 1, wherein the front electrical contact comprises a busbar.

5. (Original) The solar cell of claim 1, wherein the diffusion layer is gold.

6. (Original) The solar cell of claim 1, wherein the barrier layer is made of a barrier-layer metal selected from the group consisting of platinum, palladium, rhodium, and nickel.

7. (Original) The solar cell of claim 1, wherein the joining layer is made of a joining-layer metal selected from the group consisting of silver, gold, aluminum, and copper.

8. (Original) The solar cell of claim 1, wherein

the titanium layer has a thickness of from about 50 Angstroms to about 250 Angstroms,

the diffusion layer has a thickness of from about 100 Angstroms to about 600 Angstroms,

the barrier layer has a thickness of from about 100 Angstroms to about 1000 Angstroms, and

the joining layer has a thickness of from about 20,000 Angstroms to about 70,000 Angstroms.

9. (Original) The solar cell of claim 1, wherein the solar cell active semiconductor structure comprises a doped silicon layer or a doped gallium arsenide layer.

10. (Original) A method for fabricating a solar cell, comprising the steps of providing

an active semiconductor structure having an active semiconductor structure front side and an active semiconductor structure back side, wherein the active semiconductor structure produces a voltage between the active semiconductor structure front side and the active semiconductor structure back side when illuminated, and

a back electrical contact overlying and contacting the active semiconductor structure back side;

applying a front electrical contact overlying and contacting the active semiconductor structure front side, wherein the front electrical contact has multiple layers comprising:

a titanium layer overlying and contacting the active semiconductor structure front side,

a diffusion layer overlying and contacting the titanium layer,

a barrier layer overlying and contacting the diffusion layer, and

a joining layer overlying and contacting the barrier layer.

11. (Original) The method of claim 10, wherein the step of applying includes the step of

sequentially depositing the titanium layer, the diffusion layer, the barrier layer, and the joining layer.

12. (Original) The method of claim 10, wherein the step of applying includes the step of

sequentially vacuum depositing the titanium layer, the diffusion layer, the barrier layer, and the joining layer in a vacuum deposition apparatus in a single pumpdown from ambient pressure.

13. (Original) The method of claim 10, including an additional step of

affixing a front electrical lead overlying and contacting an attachment pad region of the front electrical contact.

14. (Original) The method of claim 10, wherein the step of applying includes the steps of

applying the titanium layer to a thickness of from about 50 Angstroms to about 250 Angstroms,

applying the diffusion layer to a thickness of from about 100 Angstroms to about 600 Angstroms,

applying the barrier layer to a thickness of from about 100 Angstroms to about 1000 Angstroms, and

applying the joining layer to a thickness of from about 20,000 Angstroms to about 70,000 Angstroms.

15. (Original) The method of claim 10, wherein the step of applying includes the step of

applying platinum, pal1adium, rhodium, or nickel as the barrier layer.

~~17~~ 16. (Currently amended) The method of claim 10, wherein the active semiconductor structure comprises a doped silicon layer or a doped gallium arsenide layer.

17. (Original) A method for fabricating a solar cell, comprising the steps of providing

an active semiconductor structure having an active semiconductor structure front side and an active semiconductor structure back side, wherein the active semiconductor structure produces a voltage between the active semiconductor structure front side and the active semiconductor structure back side when illuminated, and

a back electrical contact overlying and contacting the active semiconductor structure back side;

applying a front electrical contact overlying and contacting the active semiconductor structure front side, wherein front electrical contact has multiple layers comprising:

a titanium layer overlying and contacting the active semiconductor structure front side,

a gold layer overlying and contacting the titanium layer,

a platinum layer overlying and contacting the gold layer, and

a silver layer overlying and contacting the platinum layer, wherein the step of applying includes the step of sequentially vacuum depositing the titanium layer, the gold layer, the platinum layer, and the silver layer in a vacuum deposition apparatus in a single pumpdown from ambient pressure; and

affixing a front electrical lead overlying and contacting an attachment pad region of the front electrical contact.

18. (New) The solar cell of claim 1, wherein the titanium layer has a thickness of from about 50 Angstroms to about 250 Angstroms.

19. (New) The method of claim 10, wherein the step of applying includes the step of

applying the titanium layer to a thickness of from about 50 Angstroms to about 250 Angstroms.

20. (New) The method of claim 17, wherein the step of applying includes the step of

applying the titanium layer to a thickness of from about 50 Angstroms to about 250 Angstroms.